The Big Wood River Watershed Management Plan

December 31, 2001 – Submission to IDEQ-State Office
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May 15, 2002 – Approval by USEPA of TMDL

Executive Summary

The federal Clean Water Act (CWA) requires that states and tribes restore and maintain the chemical, physical, and biological integrity of the nation's waters (33 USC § 1251.101). States and tribes, pursuant to section 303 of the CWA are to adopt water quality standards necessary to protect fish, shellfish, and wildlife while providing for recreation in and on the waters whenever possible. Section 303(d) of the CWA establishes requirements for states and tribes to identify and prioritize water bodies that are water quality limited (i.e., water bodies that do not meet water quality standards). States and tribes must periodically publish a priority list of impaired waters, currently every two years. For waters identified on this list, states and tribes must develop a total maximum daily load (TMDL) for the pollutants, set at a level to achieve water quality standards. This document addresses the water bodies in the Big Wood River Subbasin that have been placed on what is known as the "303(d) list."

This subbasin assessment and TMDL analysis has been developed to comply with Idaho's TMDL schedule. This assessment describes the physical, biological, and cultural setting; water quality status; pollutant sources; and recent pollution control actions in the Big Wood River Subbasin located in the southcentral portion of Idaho. The first part of this document, the subbasin assessment, is an important first step in leading to the TMDL. The starting point for this assessment was Idaho's current 303(d) list of water quality limited water bodies. Twenty (20) segments of the Big Wood River Subbasin were listed on this list. The subbasin assessment portion of this document examines the current status of 303(d) listed waters, and defines the extent of impairment and causes of water quality limitation throughout the subbasin. The loading analysis quantifies pollutant sources and allocates responsibility for load reductions needed to return listed waters to a condition of meeting water quality standards.

Subbasin at a Glance

The following description provides a short and concise review of the Big Wood River subbasin.

Subbasin	Big Wood River, HUC 17040212
303(d) Streams	Big Wood River – 5 segments
Tributaries – 15 segments	
Key Resource:	
Above Magic Reservoir	– Special resource water and domestic water supply
Below Magic Reservoir	– Agricultural water supply
Beneficial uses affected:	Cold water aquatic life, salmonid spawning, primary and Secondary contact recreation
Pollutants-of-concern	Suspended sediments, substrate sediments, total phosphorus, and pathogens (*Escherichia coli*)
Sources considered	Point sources – 3 Sewage Treatment Plant facilities Nonpoint sources – Agriculture, grazing, and forestry

The Big Wood River Subbasin and the extent of the Big Wood River Watershed Management Plan is best described by the following three figures. Figure A describes the subbasin in relation to the Idaho counties. Figure B illustrates the 1998 303(d) listed streams

in the Big Wood River Subbasin. And Figure C illustrates the various segments of the Big Wood River mainstem.

Figure A describes the subbasin in relation to the Idaho counties.

Figure A. The Big Wood River Subbasin

Figure B illustrates the 1998 303(d) listed streams in the Big Wood River Subbasin.

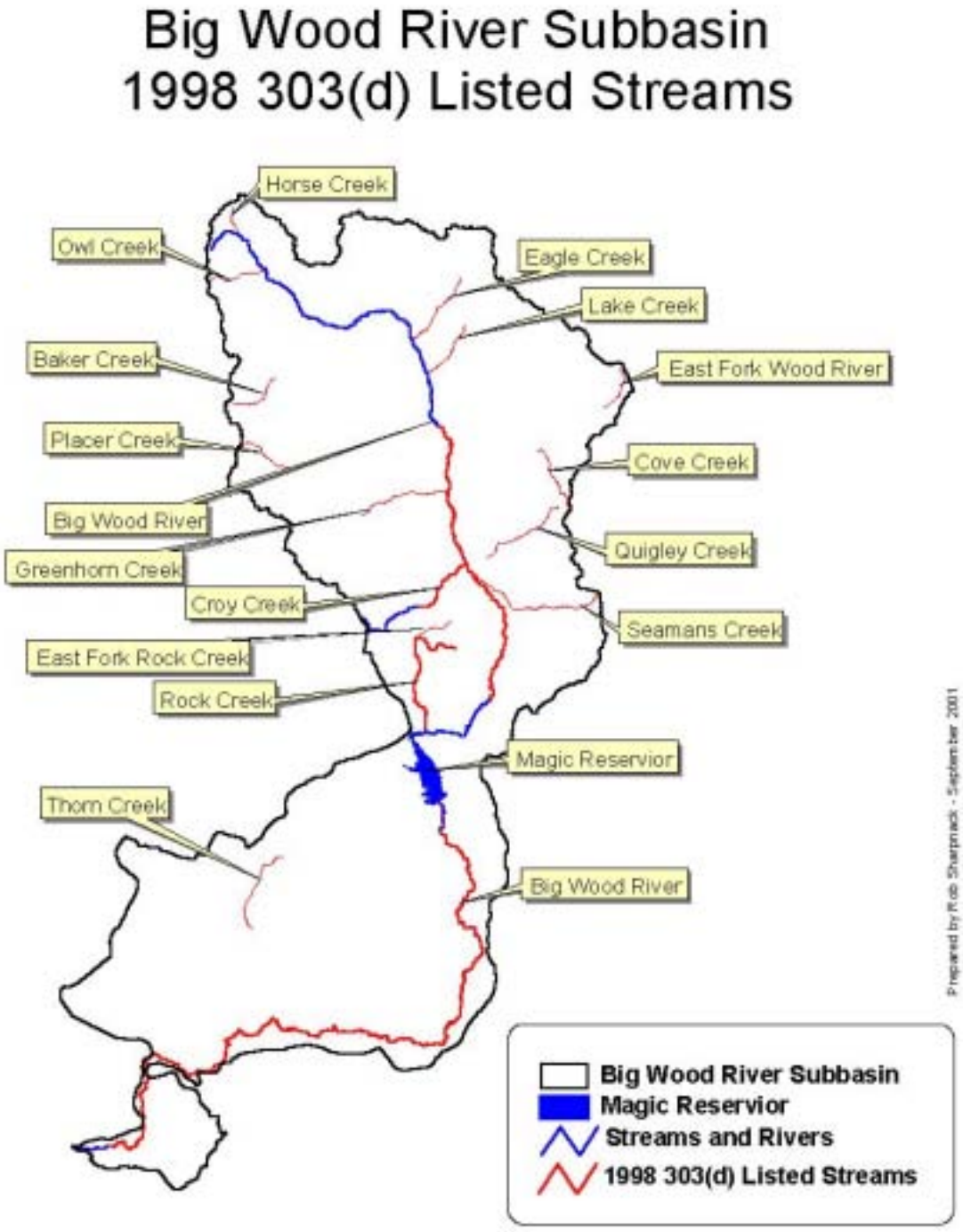

Figure B. 1998 303(d) stream segments of the Big Wood River Subbasin

Figure C illustrates the various segments of the Big Wood River mainstem.

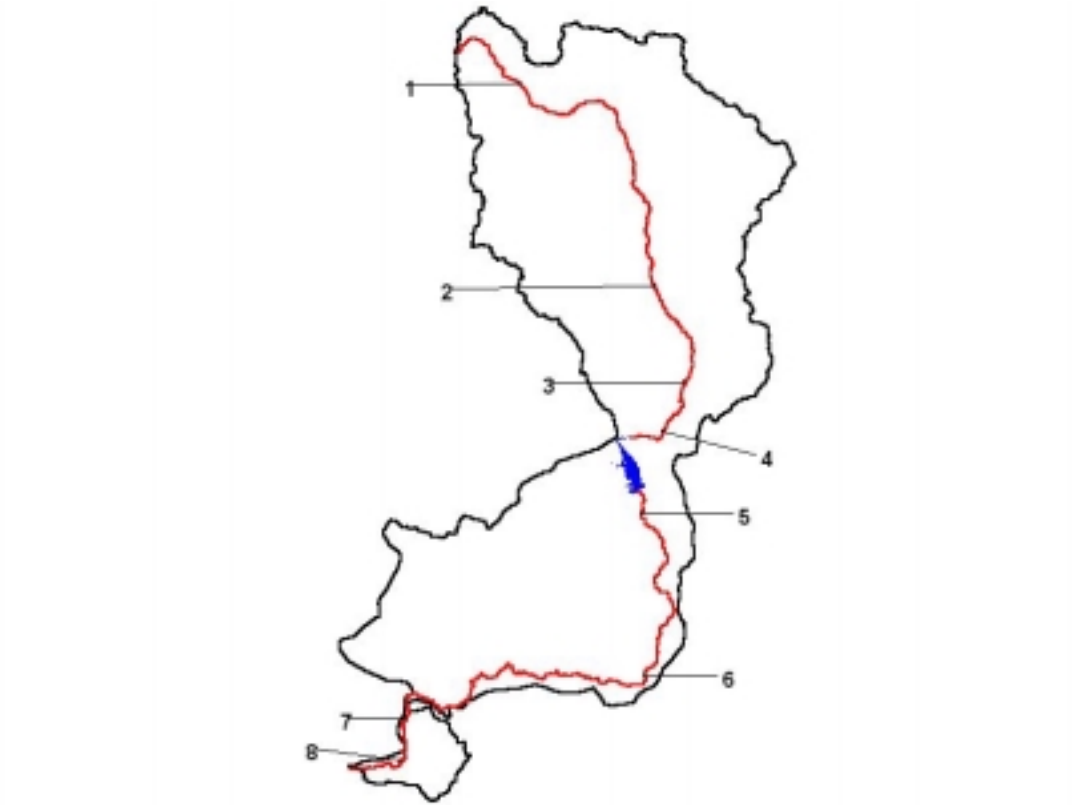

Figure C. Mainstem Big Wood River segments

BWR-1: Segment 1: Headwaters to Trail Creek
BWR-2: Segment 2: Trail Creek to Glendale Diversion
BWR-3: Segment 3: Glendale Diversion to Base Line
BWR-4: Segment 4: Base Line to Magic Reservoir
BWR-5: Segment 5: Magic Reservoir to Highway 75
BWR-6: Segment 6: Highway 75 to Little Wood River confluence
BWR-7: Segment 7: Little Wood River confluence to Interstate 84
BWR-8: Segment 8: Interstate 84 to Middle Snake River

The following tables summarize various characteristics of the 303(d) process for the Big Wood River Subbasin. Table A summarizes the streams that are listed on the 1998 303(d) list, their pollutants-of-concern, and the beneficial uses affected for the Big Wood River Subbasin. Point source impacts occur only in Segment 2, from Trail Creek to the Glendale Diversion. Table B summarizes the key indicators of impairment, the pollutant sources considered, the known pollutant sources, and the load reductions needed.

Table A summarizes the streams that are listed on the 1998 303(d) list, their pollutants-of-concern, and the beneficial uses affected for the Big Wood River Subbasin. The entire Big Wood River is being assessed and evaluated in the Big Wood River Watershed Management Plan for two important reasons. First, USEPA and IDEQ-TFRO agreed that doing a complete assessment of the Big Wood River was necessary and opportune for purposes of the TMDL

process at this time. Second, the decisions units (or segment numbers of the Big Wood River) may be used in the event that pollution trading becomes a viable option in the subbasin.

Table A. 1998 303(d) list of streams, pollutants, and beneficial uses

Stream Name	WQLS No.	Pollutants								Beneficial Uses					
		S	N	A	DO	TM	B	F	U	CW	SS	PC	SC	SR	DW
Big Wood River Mainstem Segments															
BWR-1: Hwt to Trail Ck	NOL								X	X	X	X		X	X
BWR-2: Trail Ck to Glen Div	2483							X		X	X	X		X	X
BWR-3: Glen Div to BaseLine	2482							X		X	X	X		x	x
BWR-4: BaseLIne to Mag Res	NOL								X	X	X	X		X	X
BWR-5: Mag Res to Hwy 75	2478	X	X					X		X	X	X			
BWR-6: Hwy 75 to LWR	2477	X	X	X	X		X	X		X	X	X			
BWR-7: LWR to Int 84	2476	x	x	x	x		x	x		X	X	X			
BWR-8: Int 84 to Snake River	NOL								X	X	X	X			
Tributaries or Tributary Segments															
Horse Ck – Hwt to BWR	7613								X	X	X		X		
Owl Ck – Hwt to BWR	5290								X	X	X		X		
Baker Ck – Hwt to Norton Ck	5292								X	X	X	X			
Baker Ck – NortonCk to BWR	NOL								X	X	X	X			
Eagle Ck – Hwt to BWR	5291								X	X	X		X		
Lake Ck – Hwt to BWR	7614								X	X	X		X		
Placer Ck – Hwt to WSCk	5293								X	X	X		X		
Cove Ck – Hwt to EFWR	5296								X	X	X		X		
EFWR – Hwt to Blind Can	5295								X	X	X		X		
Greenhorn Gul –Hwt to BWR	5294								X	X	X		X		
Quigley Ck – Hwt to mouth	5297								X	X	X		X		
Croy Ck – Elk Ck to BWR	2491	x	x					X		X	X		X		
Seamans Ck – Hwt to mouth	5298								X	X			X		
Rock Ck – Hwt to Magic Res	2487	x				x	x	x		X	X		X		
EFRC – Hwt to Rock Ck	5299								X		X	X	X		
ThornCk–Hwt to Schooler Ck	5300								x		X		X		

Prepared by IDEQ-TFRO. WQLS No. = Water quality limited stream identification number as it appears in the 1998 303(d) list. S = Sediment. N = Nutrients. A = Ammonia. DO = Dissolved oxygen. TM = Temperature or temperature modification. B = Bacteria. F = Flow alteration. U = Unknown. CW = Cold water aquatic life. SS = Salmonid spawning. PC = Primary contact recreation. SC = Secondary contact recreation. SR = Special resource water. DW = Drinking water supply. All streams are also protected for agricultural water supply, industrial water supply, wildlife habitats, and aesthetics. NOL = Not on 303(d) list but being included in the overall assessment. Ck = Creek. Glen Div = Glendale Diversion. Hwy = Highway. LWR = Little Wood River. Hwt = Headwaters. BWR = Big Wood River. WSCk = Warm Springs Creek. EFWR = East Fork Wood River. Can = Canyon. Gul = Gulch. Mag Res = Magic Reservoir. EFRC = East Fork Rock Creek. Int = Interstate.

Baker Creek is listed from its headwaters to Norton Creek. From Norton Creek to the Big Wood River the creek is meeting its beneficial uses and therefore is not listed on the 303(d) list. USEPA and IDEQ-TFRO did a site assessment of the stream and agreed that IDEQ-TFRO would assess the entire stream from its headwaters to the Big Wood River as part of The Big Wood River Watershed Management Plan. A similar site assessment was also done on East Fork Wood River. However, it was decided that the landuse and ownership diversity of the East Fork Wood River was multi-cultural and thus would necessitate keeping the

segments “as is” in terms of TMDL assessment. The term “multi-cultural” implies that that is more than two cultural practices that affect the water quality of the stream.

Table B summarizes the key indicators of impairment, the pollutant sources considered, the known pollutant sources, and the load reductions needed. Point source impacts occur only in Segment 2, from Trail Creek to the Glendale Diversion. The Big Wood River is divided into the decision units (or segments) as defined in Table A.

Table B. Key indicators of impairment and load reductions

Stream & WQLS No.	Pollutant Sources, landuse %				% Reduction			
	Forest	Range	Irrigated	Riparian	TSS	Sub	TP	*E. coli*
Big Wood River Mainstem Segments								
BWR – 1	34.8	49.2	0.3	15.7	0.0	0.0	0.0	0.0
BWR – 2	0.0	34.9	35.2	30.0	0.0	24.4	0.0	69.9
BWR – 3	0.0	2.5	77.0	20.5	0.0	34.6	20.6	0.0
BWR – 4	0.0	45.8	44.8	9.3	0.0	40.3	24.2	22.2
BWR – 5	0.0	91.5	1.5	7.0	0.0	0.0	0.0	0.0
BWR – 6	0.0	56.8	43.1	0.0	0.0	9.5	23.7	0.0
BWR – 7	0.0	38.3	61.7	0.0	0.0	27.1	13.8	0.0
BWR – 8	0.0	24.0	75.1	0.9	0.0	24.4	0.0	0.0
Tributaries or Tributary Segments								
Horse Ck – 7613	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Owl Ck – 5290	78.4	10.2	0.0	11.4	0.0	0.0	0.0	0.0
Baker Ck – Entire	72.6	27.4	0.0	0.0	0.0	0.0	0.0	0.0
Eagle Ck – 5291	18.6	81.4	0.0	0.0	0.0	0.0	0.0	0.0
Lake Ck – 7614	2.1	96.4	0.0	1.5	0.0	0.0	0.0	0.0
Placer Ck – 5293	88.1	11.9	0.0	0.0	0.0	0.0	0.0	0.0
Cove Ck – 5296	0.0	100.0	0.0	0.0	0.0	32.3	41.9	0.0
EFWR – 5295	24.7	75.3	0.0	0.0	0.0	0.0	0.0	0.0
Greenhorn – 5294	0.0	74.2	6.9	19.0	0.0	3.0	63.8	0.0
Quigley Ck– 5297	0.0	87.1	12.9	0.0	0.0	44.3	0.0	0.0
Croy Ck – 2491	0.0	82.0	13.3	4.7	0.0	49.2	0.0	0.0
Seamans – 5298	0.0	70.7	23.0	6.2	0.0	21.7	0.0	8.0
Rock Ck – 2487	0.0	88.0	11.5	0.4	0.0	35.8	0.0	25.9
EFRC – 5299	0.0	100.0	0.0	0.0	0.0	58.1	37.5	0.0
Thorn Ck - 5300	0.0	100.0	0.0	0.0	0.0	52.7	24.8	0.0

Prepared by IDEQ-TFRO. BWR = Big Wood River. Ck = Creek. EFWR = East Fork Wood River. EFRC = East Fork Rock Creek. TSS = Total suspended solids. Sub = Substrate sediments. TP = Total phosphorus. *E. coli* = Escherichia coli. Entire = the entire creek.

Additional to the major nonpoint sources listed in Table B, other nonpoint sources (non-major) of pollution were considered. These included construction, roads, stream crossings, mining, urban runoff, rural runoff, diversions, and septic tanks. At the present time there is no clear scientific evidence that these additional nonpoint sources contribute in the major categories as forestland, rangeland, irrigated land, and riparian lands. The Wood River Watershed Advisory Group and the Wood River Technical Advisory Committee supported

this finding and agreed to consider these additional minor nonpoint sources during the implementation period.

Key Findings

The following defines the key findings on each of the 303(d) streams, what actions will be taken by IDEQ-TFRO as a consequence of these findings, and relevant issues pertaining to numeric targets, loading capacity, wasteload allocations, and load allocations.

- Problem Statement
  Table C summarizes a problem statement for the indicated stream segments. The problem statement stipulates that problem variables have associated pollutants.

Table C. Problem statement for 303(d) streams

Stream and WQLS No.	Problem Variables	Associated Pollutants
Big Wood River Mainstem Segments		
BWR – 1	Meeting beneficial uses.	-
BWR – 2	Q, HI	Q
BWR – 3	Tem, Ex nut, excess sed, Q, HI	Tem, NOX, TP, Sed, Q
BWR – 4	Tem, Ex nut, excess sed, Q, HI	Tem, NOX, TP, Sed, Q
BWR – 5	Tem, Ex nut, Q, HI	Tem, NOX, TP, Q
BWR – 6	Tem, Ex nut, excess sed, DO, Q, HI	Tem, DO, NTU, Sed, NOX, TP, Q
BWR – 7	Tem, Ex nut, excess sed, Q, HI	Tem, Sed, NOX, TP, Q
BWR – 8	Ex nut, excess sed, Q, HI	NOX, TP, Sed, Q
Tributaries or Tributary Segments		
Horse Ck – 7613	Delist + Antidegradation Policy	-
Owl Ck – 5290	Delist + Antidegradation Policy	-
Baker Ck – 5292	Delist + Antidegradation Policy	-
Eagle Ck – 5291	Tem, Ex nut, excess sed, MBI	Tem, TP, Sed, Q
Lake Ck – 7614	Ex nut, MBI	NOX, TP, Q
Placer Ck – 5293	Ex nut, MBI	NOX, TP
Cove Ck – 5296	Ex nut, excess sed, HI, MBI	NTU, TP, Sed, Q
EFWR – 5295	Delist + Antidegradation Policy	-
Greenhorn – 5294	Tem, Ex nut, excess sed, MBI	Tem, Sed, TP, Q
Quigley Ck– 5297	Tem, Ex nut, excess sed, DO, HI, MBI	Tem, DO, NOX, TP, Sed, Q
Croy Ck – 2491	Ex nut, excess sed, HI, MBI	TP, Sed, Q
Seamans – 5298	Tem, Ex nut, excess sed, HI, MBI	Tem, NOX, TP, Sed, Q
Rock Ck – 2487	Tem, Ex nut, excess sed, E Coli, HI, MBI	Tem, NOX, TP, Sed, E Coli, Q
EFRC – 5299	Tem, Ex nut, excess sed, HI, MBI	Tem, NOX, TP, Sed
Thorn Ck - 5300	Tem, Ex nut, excess sed, DO, HI, MBI	Tem, DO, NTU, NOX, TP, Sed, Q

Prepared by IDEQ-TFRO. Q = Flow alteration. Tem = Temperature. Ex nut = Excess nutrients. NOX = nitrite + nitrate. TP = Total phosphorus. Sed = Excess sediments. HI = Habitat Index not meeting beneficial uses. Delist = This stream will be delisted from the 303(d) list. MBI = MBI does not meet beneficial uses. NTU = Turbidity. Antidegradation Policy = This policy will be applied on all streams that will be delisted from the 303(d) list.

- Numeric Water Quality Instream Targets
  Four (4) numeric water quality instream targets have been established in the Big Wood River Watershed Management Plan. These targets are considered preliminary targets and may become more stringent after Year 10 of the plan. At present, the Big Wood River WAG and the Big Wood River TAC support these preliminary numeric water quality instream targets. Where streams are currently flowing below the instream targets, the antidegradation policy (IDAPA §58.01.02.051) will be enforced such that existing water quality and beneficial uses will be protected and maintained. Table D summarizes the numeric water quality instream targets.

Table D. Numeric water quality instream targets

Numeric Instream Targets	Average Monthly	Daily Maximum
Above Magic Reservoir		
Total suspended solids (TSS)	< 25 mg/L	< 40 mg/L
Substrate sediments (Sub)	< 35 % Fines	-
Total phosphorus (TP)	< 0.050 mg/L	< 0.080 mg/L
E. coli, geometric mean	< 126 cfu/100 mL	< 200 cfu/100 mL
Below Magic Reservoir		
Total suspended solids (TSS)	< 50 mg/L	< 80 mg/L
Substrate sediments (Sub)	< 40 % Fines	-
Total phosphorus (TP)	< 0.100 mg/L	< 0.160 mg/L
E. coli, geometric mean	< 126 cfu/100 mL	< 200 cfu/100 mL
Prepared by IDEQ-TFRO. The targets are dependent on whether the streams discharge above or below the Magic Reservoir. Where water bodies are canalways, compliance will be at the point where the canal discharges to a natural waterbody.		

- Loading Capacity Analysis
  A loading capacity (L.C.) analysis includes the wasteload allocations (WLA), the load allocations (LA), natural background, and the margin of safety (MOS). Seasonal variation was considered in the development of the TMDL but insufficient water quality data was obtained to allow for seasonal variation calculations. However, as more information is collected over the next 3-5 years, seasonal targets may be developed and adjustments made, if necessary.

  Tables E, F, G, and H summarize the L.C. calculations for the entire mainstem of the Big Wood River for TSS, substrate sediments, TP, and *E. coli*. Magic Reservoir was excluded since it is not listed on the 303(d) list. The mainstem of the Big Wood River was divided into decision-making units, which correspond to the designations of the river according to the 303(d) listing.

Unit 2 has the wasteload allocations for the three- (3) point sources that discharge directly to the Big Wood River.

Table E. Mainstem Big Wood River TSS L.C. calculations

Unit	Stream and WQLS No.	L.C. t/yr	WLAs t/yr	LAs t/yr	10% Natural Background t/yr	10% MOS t/yr
1	BWR – 1	2,156.7	0.0	1,725.3	215.7	215.7
2	BWR – 2 - NPS	6,670.9	0.0	5,330.7	670.1	670.1
	BWR-2-Hailey	3.3	3.3	0.0	0.0	0.0
	BWR-2-Ketchum	26.5	26.5	0.0	0.0	0.0
	BWR-2-Meadows	0.6	0.6	0.0	0.0	0.0
	BWR-2-TOTAL	6,701.3	30.4	5,330.7	670.1	670.1
3	BWR – 3	10,931.1	0.0	8,744.9	1,093.1	1,093.1
4	BWR – 4	11,452.4	0.0	9,162.0	1,145.2	1,145.2
5	BWR – 5	16,978.2	0.0	13,582.6	1,697.8	1,697.8
6	BWR – 6	1,800.1	0.0	1,440.1	180.0	180.0
7	BWR – 7	24,626.3	0.0	19,701.1	2,462.6	2,462.6
8	BWR – 8	25,826.4	0.0	20,661.2	2,582.6	2,582.6

Prepared by IDEQ-TFRO. TSS = Total suspended solids. WQLS = Water quality limited stream. L.C. = Load Capacity = TMDL = WLA + LA + Natural Background + MOS. WLAs = Wasteload allocations for point sources. LAs = Load allocations for nonpoint sources. MOS = Margin of safety. Hwt = Headwaters. Ck = Creek. t/yr = tons/year. The WLAs of 30.4 t/yr in Unit 2 represents three (3) point source wastewater treatment facilities – The Meadows, City of Hailey, and City of Ketchum. NPS = Nonpoint source.

Table F. Mainstem Big Wood River substrate sediments L.C. calculations

Unit	Stream and WQLS No.	L.C. % Fines	WLAs % Fines	LAs % Fines	10% Natural Background % Fines	20% MOS % Fines
1	BWR – 1	35.0	0.0	24.5	3.5	7.0
2	BWR – 2 - NPS	35.0	0.0	24.5	3.5	7.0
	BWR-2-Hailey	0.0	0.0	0.0	0.0	0.0
	BWR-2-Ketchum	0.0	0.0	0.0	0.0	0.0
	BWR-2-Meadows	0.0	0.0	0.0	0.0	0.0
	BWR-2-TOTAL	35.0	0.0	24.5	3.5	7.0
3	BWR – 3	35.0	0.0	24.5	3.5	7.0
4	BWR – 4	35.0	0.0	24.5	3.5	7.0
5	BWR – 5	40.0	0.0	28.0	4.0	8.0
6	BWR – 6	40.0	0.0	28.0	4.0	8.0
7	BWR – 7	40.0	0.0	28.0	4.0	8.0
8	BWR – 8	40.0	0.0	28.0	4.0	8.0

Prepared by IDEQ-TFRO. WQLS = Water quality limited stream. L.C. = Load Capacity = TMDL = WLA + LA + Natural Background + MOS. WLAs = Wasteload allocations for point sources. LAs = Load allocations for nonpoint sources. MOS = Margin of safety. Hwt = Headwaters. Ck = Creek. t/yr = tons/year.

Unit 2 of Table G has three (3) point sources. The point sources represent the City of Hailey, the City of Ketchum, and The Meadows wastewater treatment plants. Because of the special

resource water designation, more water quality monitoring data is needed in order to more fully understand the relationship between the point sources and the nonpoint sources in this stretch of the Big Wood River. Therefore, a monitoring plan will be developed by IDEQ-TFRO in conjunction with the three- (3) point sources to specifically look at describing fully the TP impacts from nonpoint and point sources. The monitoring plan will be developed and finalized during the implementation phase and monitoring will be finalized by year 2003.

Table G. Mainstem Big Wood River TP LC calculations

Unit	Stream and WQLS No.	L.C. lb/day	WLAs lb/day	LAs lb/day	10% Natural Background lb/day	10% MOS lb/day
1	BWR – 1	23.6	0.0	18.9	2.4	2.4
2	BWR – 2 – NPS	56.0	0.0	41.4	7.3	7.3
	BWR-2-Hailey	5.2	5.2	0.0	0.0	0.0
	BWR-2-Ketchum	9.9	9.9	0.0	0.0	0.0
	BWR-2-Meadows	2.3	2.3	0.0	0.0	0.0
	BWR-2-TOTAL	73.4	17.4	41.4	7.3	7.3
3	BWR – 3	119.8	0.0	95.8	12.0	12.0
4	BWR – 4	125.5	0.0	100.4	12.6	12.6
5	BWR – 5	186.1	0.0	148.9	18.6	18.6
6	BWR – 6	19.7	0.0	15.8	2.0	2.0
7	BWR – 7	269.9	0.0	215.9	27.0	27.0
8	BWR – 8	283.0	0.0	226.4	28.3	28.3

Prepared by IDEQ-TFRO. TP = Total phosphorus. WQLS = Water quality limited stream. L.C. = Load Capacity = TMDL = WLA + LA + Natural Background + MOS. WLAs = Wasteload allocations for point sources. LAs = Load allocations for nonpoint sources. MOS = Margin of safety. Hwt = Headwaters. Ck = Creek. t/yr = tons/year. NPS = Nonpoint source.

The WLAs of 17.4 lb/day in Unit 2 represents three (3) point source wastewater treatment facilities – the Meadows, City of Hailey, and City of Ketchum.

Table H. Mainstem Big Wood River *E. coli* L.C. calculations

Unit	Stream and WQLS No.	LC cfu^9	WLAs Cfu^9	LAs cfu^9	10% Natural Background cfu^9	10% MOS cfu^9
1	BWR – 1	270.2	0.0	216.1	27.0	27.0
2	BWR-2-NPS	346.4	0.0	276.6	34.9	34.9
	BWR-2-Hailey	0.2	0.2	0.0	0.0	0.0
	BWR-2-Ketchum	2.7	2.7	0.0	0.0	0.0
	BWR-2-Meadows	0.1	0.1	0.0	0.0	0.0
	BWR – 2 - TOTAL	349.4	3.0	276.6	34.9	34.9
3	BWR – 3	1,369.4	0.0	1,095.5	136.9	136.9
4	BWR – 4	1,434.7	0.0	1,147.7	143.5	143.5
5	BWR – 5	1,063.5	0.0	850.8	106.3	106.3
6	BWR – 6	112.8	0.0	90.2	11.3	11.3

7	BWR – 7	1,542.5	0.0	1,234.0	154.3	154.3
8	BWR – 8	1,617.7	0.0	1,294.1	161.8	161.8

Prepared by IDEQ-TFRO. TP = Total phosphorus. WQLS = Water quality limited stream. L.C. = Load Capacity = TMDL = WLA + LA + Natural Background + MOS. WLAs = Wasteload allocations for point sources. LAs = Load allocations for nonpoint sources. MOS = Margin of safety. Hwt = Headwaters. Ck = Creek. t/yr = tons/year. The WLAs of 3.0 cfu^9 in Unit 2 represents three (3) point source wastewater treatment facilities – The Meadows, City of Hailey, and City of Ketchum. NPS = Nonpoint source.

Tables I, J, K, and L summarize the LC calculations for the 303(d) listed tributaries for TSS, substrate sediments, TP, and *E. coli*. These are grouped according to their decision Unit number as defined in Tables S, T, U, and V.

Table I. Tributary TSS L.C. calculations

Unit	Stream and WQLS No.	LC t/yr	WLAs t/yr	LAs t/yr	6% Natural Background t/yr	10% MOS t/yr
1	Horse Ck – 7613	41.8	0.0	35.1	2.5	4.2
	Owl Ck – 5290	71.3	0.0	59.9	4.3	7.1
	Baker Ck – 5292	290.2	0.0	243.8	17.4	29.0
	Eagle Ck – 5291	68.9	0.0	57.8	4.1	6.9
	Lake Ck – 7614	54.1	0.0	45.4	3.2	5.4
2	Placer Ck – 5293	54.1	0.0	45.4	3.2	5.4
	Cove Ck – 5296	34.4	0.0	28.9	2.1	3.4
	EFWR – 5295	113.1	0.0	95.0	6.8	11.3
	Greenhorn – 5294	14.8	0.0	12.4	0.9	1.5
	Quigley Ck– 5297	243.5	0.0	204.5	14.6	24.3
	Croy Ck – 2491	54.1	0.0	45.4	3.2	5.4
	Seamans – 5298	14.8	0.0	12.4	0.9	1.5
3	No 303(d) Streams	-	-	-	-	-
4	Rock Ck – 2487	44.3	0.0	37.2	2.7	4.4
	EFRC – 5299	27.1	0.0	22.7	1.6	2.7
5	No 303(d) Streams	-	-	-	-	-
6	Thorn Ck - 5300	186.9	0.0	157.0	11.2	18.7
7	No 303(d) Streams	-	-	-	-	-
8	No 303(d) Streams	-	-	-	-	-

Prepared by IDEQ-TFRO. TSS = Total suspended solids. WQLS = Water quality limited stream. L.C. = Load Capacity = TMDL = WLA + LA + Natural Background + MOS. WLAs = Wasteload allocations for point sources. LAs = Load allocations for nonpoint sources. MOS = Margin of safety. Hwt = Headwaters. Ck = Creek. t/yr = tons/year.

Table J. Tributary substrate sediments LC calculations

Unit	Stream and WQLS No.	L.C. % Fines	WLAs % Fines	LAs % Fines	6% Natural Background % Fines	20% MOS % Fines
1	Horse Ck – 7613	35.0	0.0	25.9	2.1	7.0
	Owl Ck – 5290	35.0	0.0	25.9	2.1	7.0
	Baker Ck – 5292	35.0	0.0	25.9	2.1	7.0
	Eagle Ck – 5291	35.0	0.0	25.9	2.1	7.0
	Lake Ck – 7614	35.0	0.0	25.9	2.1	7.0
2	Placer Ck – 5293	35.0	0.0	25.9	2.1	7.0
	Cove Ck – 5296	35.0	0.0	25.9	2.1	7.0
	EFWR – 5295	35.0	0.0	25.9	2.1	7.0
	Greenhorn – 5294	35.0	0.0	25.9	2.1	7.0
	Quigley Ck– 5297	35.0	0.0	25.9	2.1	7.0
	Croy Ck – 2491	35.0	0.0	25.9	2.1	7.0
	Seamans – 5298	35.0	0.0	25.9	2.1	7.0
3	No 303(d) Streams	-	-	-	-	-
4	Rock Ck – 2487	35.0	0.0	25.9	2.1	7.0
	EFRC – 5299	35.0	0.0	25.9	2.1	7.0
5	No 303(d) Streams	-	-	-	-	-
6	Thorn Ck - 5300	40.0	0.0	29.6	2.4	8.0
7	No 303(d) Streams	-	-	-	-	-
8	No 303(d) Streams	-	-	-	-	-

Prepared by IDEQ-TFRO. WQLS = Water quality limited stream. L.C. = Load Capacity = TMDL = WLA + LA + Natural Background + MOS. WLAs = Wasteload allocations for point sources. LAs = Load allocations for nonpoint sources. MOS = Margin of safety. Hwt = Headwaters. Ck = Creek. % Fines = Percent fines as determined by Wolman pebble counts.

Table K. Tributary TP LC calculations

Unit	Stream and WQLS No.	L.C. lb/day	WLAs lb/day	LAs lb/day	6% Natural Background lb/day	10% MOS lb/day
1	Horse Ck – 7613	0.5	0.0	0.38	0.03	0.05
	Owl Ck – 5290	0.8	0.0	0.66	0.05	0.08
	Baker Ck – 5292	3.2	0.0	2.67	0.19	0.32
	Eagle Ck – 5291	0.8	0.0	0.63	0.05	0.08
	Lake Ck – 7614	0.6	0.0	0.50	0.04	0.06
2	Placer Ck – 5293	0.6	0.0	0.50	0.04	0.06
	Cove Ck – 5296	0.4	0.0	0.32	0.02	0.04
	EFWR – 5295	1.2	0.0	1.04	0.07	0.12
	Greenhorn – 5294	0.2	0.0	0.14	0.01	0.02
	Quigley Ck– 5297	2.7	0.0	2.24	0.16	0.27
	Croy Ck – 2491	0.6	0.0	0.50	0.04	0.06
	Seamans – 5298	0.2	0.0	0.14	0.01	0.02
3	No 303(d) Streams	-	-	-	-	-
4	Rock Ck – 2487	0.5	0.0	0.41	0.03	0.05
	EFRC – 5299	0.3	0.0	0.25	0.02	0.03
5	No 303(d) Streams	-	-	-	-	-
6	Thorn Ck - 5300	2.0	0.0	1.72	0.12	0.20

7	No 303(d) Streams	-	-	-	-	-
8	No 303(d) Streams	-	-	-	-	-

Prepared by IDEQ-TFRO. TP = Total phosphorus. WQLS = Water quality limited stream. L.C. = Load Capacity = TMDL = WLA + LA + Natural Background + MOS. WLAs = Wasteload allocations for point sources. LAs = Load allocations for nonpoint sources. MOS = Margin of safety. Hwt = Headwaters. Ck = Creek. lb/day = Pounds/day.

Table L. Tributary *E. coli* LC calculations

Unit	Stream and WQLS No.	LC cfu^9	WLAs cfu^9	LAs cfu^9	6% Natural Background cfu^9	10% MOS cfu^9
1	Horse Ck – 7613	5.2	0.0	4.4	0.3	0.5
	Owl Ck – 5290	8.9	0.0	7.5	0.5	0.9
	Baker Ck – 5292	36.4	0.0	30.5	2.2	3.6
	Eagle Ck – 5291	8.6	0.0	7.2	0.5	0.9
	Lake Ck – 7614	6.8	0.0	5.7	0.4	0.7
2	Placer Ck – 5293	6.8	0.0	5.7	0.4	0.7
	Cove Ck – 5296	4.3	0.0	3.6	0.3	0.4
	EFWR – 5295	14.2	0.0	11.9	0.9	1.4
	Greenhorn – 5294	1.8	0.0	1.6	0.1	0.2
	Quigley Ck– 5297	30.5	0.0	25.6	1.8	3.0
	Croy Ck – 2491	6.8	0.0	5.7	0.4	0.7
	Seamans – 5298	1.8	0.0	1.6	0.1	0.2
3	No 303(d) Streams	-	-	-	-	-
4	Rock Ck – 2487	5.5	0.0	4.7	0.3	0.6
	EFRC – 5299	3.4	0.0	2.8	0.2	0.3
5	No 303(d) Streams	-	-	-	-	-
6	Thorn Ck - 5300	11.7	0.0	9.8	0.7	1.2
7	No 303(d) Streams	-	-	-	-	-
8	No 303(d) Streams	-	-	-	-	-

Prepared by IDEQ-TFRO. *E. coli* = *Escherichia coli*. WQLS = Water quality limited stream. L.C. = Load Capacity = TMDL = WLA + LA + Natural Background + MOS. WLAs = Wasteload allocations for point sources. LAs = Load allocations for nonpoint sources. MOS = Margin of safety. Hwt = Headwaters. Ck = Creek. cfu^9 = A billion coliform forming units.

- Streams for 303(d) Delisting

  Table C lists four (4) streams that will be delisted from the 1998 303(d) list. They are Horse Creek, Owl Creek, Baker Creek, and East Fork Wood River. IDEQ-TFRO arrived at a conclusion that these streams are meeting their beneficial uses and/or state water quality standards based on seventeen (17) components that link to beneficial uses and/or state water quality standards. This weight-of-evidence approach was utilized since each component weighs in equally as other components. An overall grade score ≥ 90.0% indicated full support. In the case of these streams their grade score was each 100.0%.

- Streams Proposed for Next 303(d) List

  Table C lists two streams or segments that are proposed for listing on the next 303(d) list. The first is in the Big Wood River mainstem from Base Line to Magic Reservoir. The second is in the Big Wood River mainstem from Interstate 84 to

the Snake River (or the Malad River). The problem variables and the associated pollutants are also listed in Table C.

- Public Input/Meetings
  The greatest public participation and comments came from the Wood River TAC, the Wood River Executive Board, and the Wood River WAG. Comments were incorporated into the document after all meetings beginning in 2000. Various drafts of the subbasin assessment were developed to solicit input from the TAC and WAG members. Although no formal public comment was required for the subbasin assessment, IDEQ-TFRO elected to have a 60-day public comment period from June 12 to August 12, 2001 for the subbasin assessment. Public hearings were held on June 12 in Gooding, Idaho and on June 19 in Hailey, Idaho. Comments were incorporated into the final subbasin assessment document. In addition, public presentations were done on August 7, 2001 in Gooding, Idaho (Executive Board) and August 28, 2001 in Gooding, Idaho (Wood River WAG) of the full watershed management plan. The official public comment period ran from September 24 to October 24, 2001 for the full Big Wood River Watershed Management Plan (which consisted of the subbasin assessment and the TMDL). It is the comments of the official public comment period (September 24 to October 24, 2001) that are summarized in Appendix E.

- Time Schedule for Meeting Water Quality Standards
  Assuming the Big Wood River TMDL is approved by USEPA in 2002, attainment of beneficial uses is preliminarily set for Year 5 (or 2006), with an additional five- (5) years (through Year 10 or 2011) of holding to water quality instream target levels. Point source and nonpoint source industries have prescribed short-term and long-term goals in the management plan based on the pollutant-of-concern.

- Streams and Pollutants for which TMDLs were Developed
  Table C summarizes the streams and pollutants in the Big Wood River Subbasin for which TMDLs will be developed as a consequence of the Big Wood River Watershed Management Plan. In the case of total suspended solids and substrate sediments (both interpreted as Ex Sed), total phosphorus (interpreted as Ex Nut), and *E. coli*, full TMDLs will be established immediately. In the case of flow (Q), it will be added to USEPA's pollution list to be further evaluated. In the case of nitrite + nitrate (interpreted as NOX), no TMDL is being pursued at this time. In the case of temperature and dissolved oxygen, TMDLs will be deferred until year 2003 pending collection of more information. In the case of turbidity, no TMDL is being pursued since TMDL reductions in Ex Sed will create reductions in turbidity. Moreover, in the case of total ammonia, the pollutant will be delisted from the 303(d) list.

- Changes to the 303(d) List
  Changes to the 303(d) list are summarized in Table M. This table is a complex table and has appropriate comments in the footnote section.

Table M. Summary of assessment outcomes

Waterbody Segment	Pollutant	TMDL(s) Completed	Recommended Changes to 303(d) List	Justify the Change
Big Wood River Mainstem Segments				
BWR – 1	None	None	Do not add to 303(d) list.	Meets BU
BWR – 2	Q	No	Put on Pollution List.	New Regs
BWR – 3	Q	No	Put on Pollution List.	New Regs
	Tem	No	Add on Pollutant List to do TMDL by 2003.	Data Gap
	Ex Nut	Yes	Add on Pollutant List and formalize TMDL.	TMDL
	Ex Sed	Yes	Add on Pollutant List and formalize TMDL.	TMDL
BWR – 4	Q	No	Put on Pollution List.	New Regs
	Tem	No	Add on Pollutant List to do TMDL by 2003	Data Gap
	Ex Nut	Yes	Add on Pollutant List and formalize TMDL.	TMDL
	Ex Sed	Yes	Add on Pollutant List and formalize TMDL.	TMDL
BWR – 5	Q	No	Put on Pollution List.	New Regs
	Tem	No	Add on Pollutant List to do TMDL by 2003	Data Gap
	Ex Nut	Yes	Add on Pollutant List and formalize TMDL.	TMDL
BWR – 6	Q	No	Put on Pollution List.	New Regs
	Tem	No	Add on Pollutant List to do TMDL by 2003.	Data Gap
	Ex Nut	Yes	Add on Pollutant List and formalize TMDL.	TMDL
	Ex Sed	Yes	Add on Pollutant List and formalize TMDL.	TMDL
	DO	No	Add on Pollutant List to do TMDL by 2003.	Data Gap
	NH3	No	Delist NH3 from Pollutant List.	Meets BU
BWR – 7	Q	No	Put on Pollution List.	New Regs
	Tem	No	Add on Pollutant List to do TMDL by 2003.	Data Gap
	Ex Nut	Yes	Add on Pollutant List and formalize TMDL.	TMDL
	Ex Sed	Yes	Add on Pollutant List and formalize TMDL.	TMDL
	NH3	No	Delist NH3 from Pollutant List.	Meets BU
BWR – 8	Q	No	Put on Pollution List.	New Regs
	Ex Nut	Yes	Add on Pollutant List and formalize TMDL.	TMDL
	Ex Sed	Yes	Add on Pollutant List and formalize TMDL.	TMDL
Tributaries or Tributary Segments				
Horse Ck – 7613	Unknown	No	IDEQ intends to delist.	Meets BU
Owl Ck – 5290	Unknown	No	IDEQ intends to delist.	Meets BU
Baker Ck – Entire	Unknown	No	IDEQ intends to delist.	Meets BU
Eagle Ck – 5291	Q	No	Put on Pollution List.	New Regs
	Tem	No	Add on Pollutant List to do TMDL by 2003.	Data Gap
	Ex Nut	Yes	Add on Pollutant List and formalize TMDL.	TMDL
	Ex Sed	Yes	Add on Pollutant List and formalize TMDL.	TMDL
Lake Ck – 7614	Q	No	Put on Pollution List.	New Regs
	Ex Nut	Yes	Add on Pollutant List and formalize TMDL.	TMDL
Placer Ck – 5293	Ex Nut	Yes	Add on Pollutant List and formalize TMDL.	TMDL
Cove Ck – 5296	Q	No	Put on Pollution List.	New Regs
	Ex Nut	Yes	Add on Pollutant List and formalize TMDL.	TMDL
	Ex Sed	Yes	Add on Pollutant List and formalize TMDL.	TMDL
EFWR – 5295	Unknown	No	IDEQ intends to delist.	Meets BU

Greenhorn – 5294	Q	No	Put on Pollution List.	New Regs
	Tem	No	Add on Pollutant List to do TMDL by 2003.	Data Gap
	Ex Nut	Yes	Add on Pollutant List and formalize TMDL.	TMDL
	Ex Sed	Yes	Add on Pollutant List and formalize TMDL.	TMDL
Quigley Ck– 5297	Q	No	Put on Pollution List.	New Regs
	Tem	No	Add on Pollutant List to do TMDL by 2003.	Data Gap
	Ex Nut	Yes	Add on Pollutant List and formalize TMDL.	TMDL
	Ex Sed	Yes	Add on Pollutant List and formalize TMDL.	TMDL
	DO	No	Add on Pollutant List to do TMDL by 2003.	Data Gap
Croy Ck – 2491	Q	No	Put on Pollution List.	New Regs
	Ex Nut	Yes	Add on Pollutant List and formalize TMDL.	TMDL
	Ex Sed	Yes	Add on Pollutant List and formalize TMDL.	TMDL
Seamans – 5298	Q	No	Put on Pollution List.	New Regs
	Tem	No	Add on Pollutant List to do TMDL by 2003.	Data Gap
	Ex Nut	Yes	Add on Pollutant List and formalize TMDL.	TMDL
	Ex Sed	Yes	Add on Pollutant List and formalize TMDL.	TMDL
Rock Ck – 2487	Q	No	Put on Pollution List.	New Regs
	Tem	No	Add on Pollutant List to do TMDL by 2003.	Data Gap
	Ex Nut	Yes	Add on Pollutant List and formalize TMDL.	TMDL
	Ex Sed	Yes	Add on Pollutant List and formalize TMDL.	TMDL
	E. coli	Yes	Add on Pollutant List and formalize TMDL.	TMDL
EFRC – 5299	Tem	No	Add on Pollutant List to do TMDL by 2003.	Data Gap
	Ex Nut	Yes	Add on Pollutant List and formalize TMDL.	TMDL
	Ex Sed	Yes	Add on Pollutant List and formalize TMDL.	TMDL
Thorn Ck – 5300	Q	No	Put on Pollution List.	New Regs
	Tem	No	Add on Pollutant List to do TMDL by 2003.	Data Gap
	Ex Nut	Yes	Add on Pollutant List and formalize TMDL.	TMDL
	Ex Sed	Yes	Add on Pollutant List and formalize TMDL.	TMDL
	DO	No	Add on Pollutant List to do TMDL by 2003.	Data Gap

Prepared by IDEQ-TFRO. TMDL = Total maximum daily load. BWR = Big Wood River. BL to MR (LIST) = Base Line to Magic Reservoir (To be listed on the 303(d) list). Q = Flow alteration or flow diversion. Tem = Temperature or thermal modification. Ex Nut = Excess nutrients (NOX and/or TP). Ex Sed = Excess sediments (Total suspended solids and/or substrate sediments). DO = Dissolved oxygen. NH3 = Total ammonia. Malad River (LIST) = Interstate 84 to the Snake River (To be listed on the 303(d) list). Ck = Creek. EFWR = East Fork Wood River. EFRC = East Fork Rock Creek. Unknown = Unknown pollutants. Entire = the entire creek.

Justify the Change: New Regs = Transfer the flow modification or flow alteration over to the pollution (not pollutant) list based on the new TMDL regulations in 2002-2003. Data Gap = Tem or DO information is lacking and requires addition information to complete a TMDL. TMDL = A TMDL will be formalized for Ex Nut, Ex Sed, and *E. coli*. as part of the TMDL process. Meets BU = IDEQ-TFRO has determined that this pollutant or stream meet beneficial uses and/or state water quality standards, and thus will invoke a delisting of the pollutant or stream from the 303(d) list.